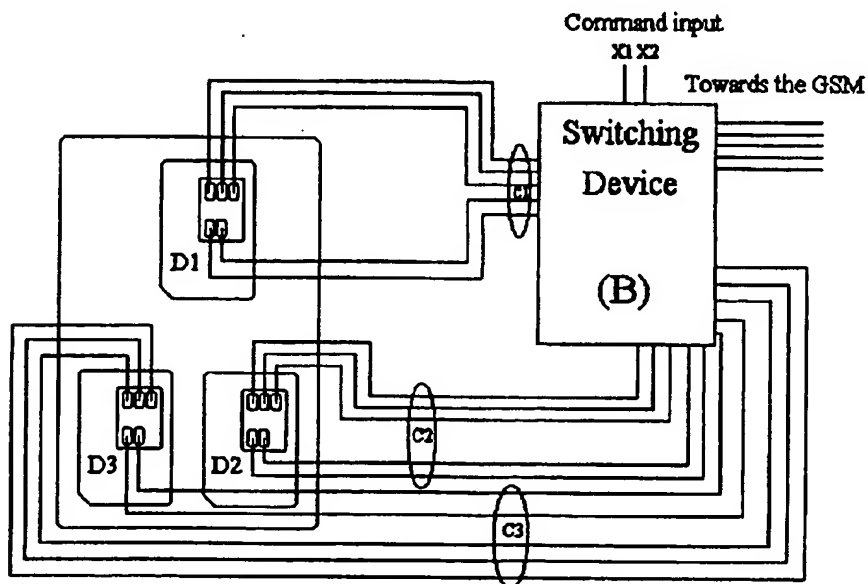




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : H04Q 7/32	A1	(11) International Publication Number: WO 99/27731 (43) International Publication Date: 3 June 1999 (03.06.99)
(21) International Application Number: PCT/IT98/00308 (22) International Filing Date: 3 November 1998 (03.11.98) (30) Priority Data: RM97U000256 26 November 1997 (26.11.97) IT (71)(72) Applicant and Inventor: MACCARONI, Giorgio, Aldo [IT/IT]; Via G.B. Martini, 6, I-00198 Roma (IT).	(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>	

(54) Title: MULTI-SIM CARD GSM CELLULAR TELEPHONE



(57) Abstract

A cellular telephone into which several SIM cards can be inserted is disclosed, thereby permitting the use of several telephone numbers without it being necessary to change the card manually each time. This offers two significant advantages: time savings over the conventional procedure for replacement of one SIM card with another and avoidance of damage to the SIM card microchips and mounting inside the telephone caused by repeated replacement of the card.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

Description

MULTI-SIM CARD GSM CELLULAR TELEPHONE

The device, as illustrated in the attached figures, consists of: a cellular telephone (A-Fig.1), which contains a switching circuit (B-Fig.2) that makes it possible to switch the wires (C1,C2,C3-Fig.2) leading from the various microchips (D1,D2,D3-Fig.2); the switching circuit contains a multiplexer (MUX-Fig.3) with four five-line inputs formed, in turn, by five multiplexers with four one-line inputs connected in parallel and commanded by the two inputs X1 and X2 in the way described in the MUX truth table (Fig.4): one of the three microchips is selected according to the logic value assigned to inputs X1 and X2;

an ISO format adaptor (E-Fig.6), containing three or more windows (F-Fig.6) into which the microchips can be inserted (G-Fig.6).

The purpose of this device is to switch rapidly from one telephone line to another without mechanical intervention.

Claims

Cellular telephone containing a switching circuit which makes it possible to switch the wires leading from the various microchips for the different telephone lines;

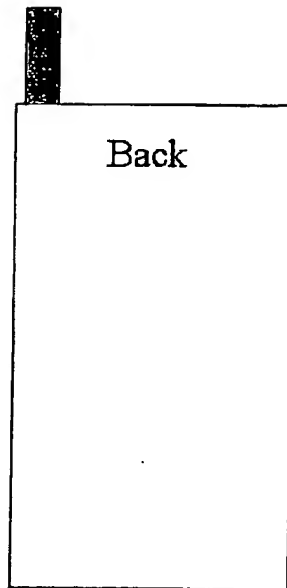
Cellular telephone, as in the previous claim, in which an ISO format adaptor card is inserted, this containing three or more windows into which the microchips for the different telephone lines are inserted;

Cellular telephone, as in Claim 1, which contains several plug-in sockets into which are inserted the microchips for the different telephone lines (Fig.8);

Cellular telephone, as in the preceding claims, whose switching circuit contains a multiplexer (MUX) with four five-line inputs formed in turn by five multiplexers with four one-line inputs connected in parallel and commanded by the two inputs X1 and X2;

Cellular telephone, as in the preceding claims, which makes it possible to switch the various telephone lines by means of the menu key or another special key.

1/4



(A)

Fig. 1

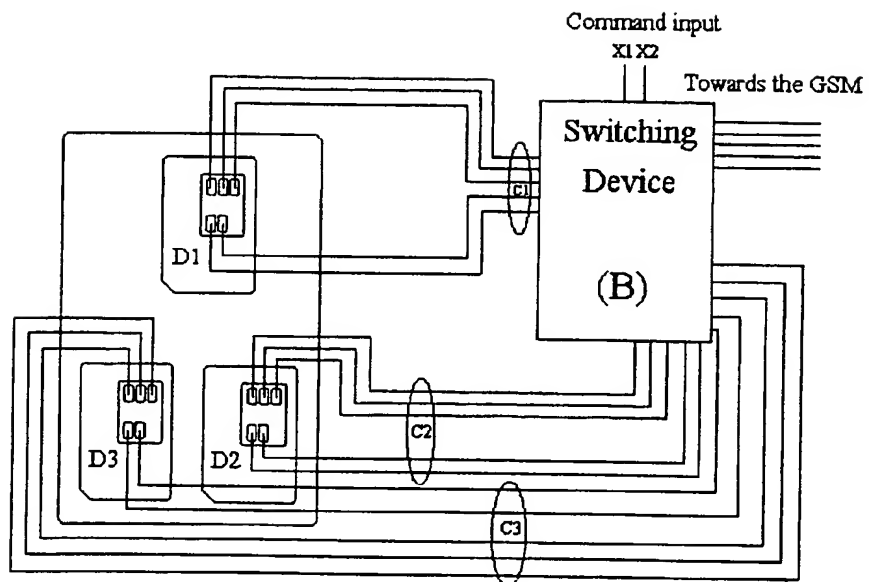


Fig. 2

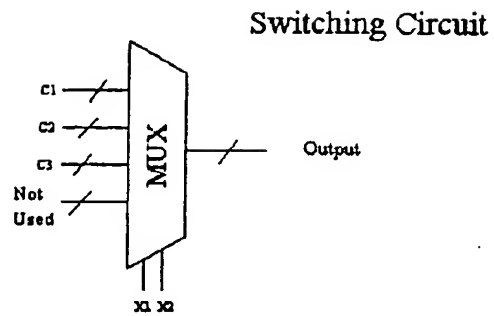


Fig. 3

MUX truth table

X1	X2	OUTPUT
0	0	C1
0	1	C2
1	0	C3
1	1	Unused

Fig.4

Fig. 6

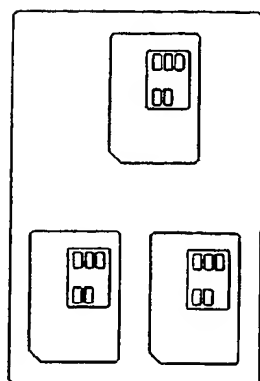
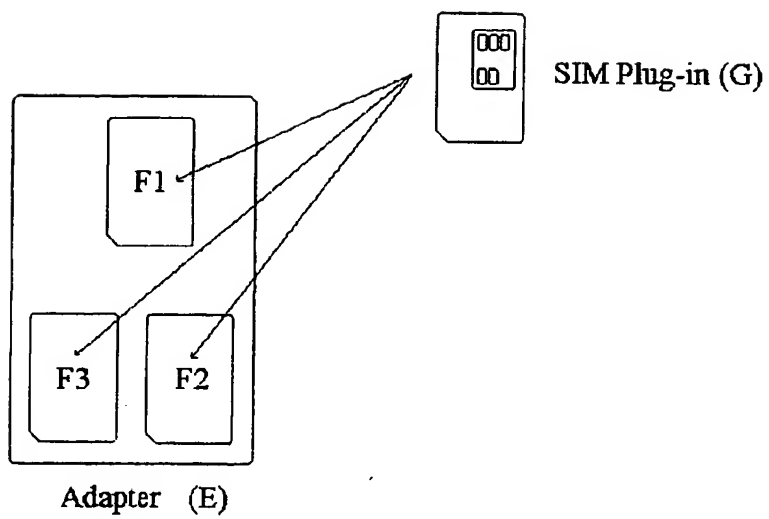


Fig.7

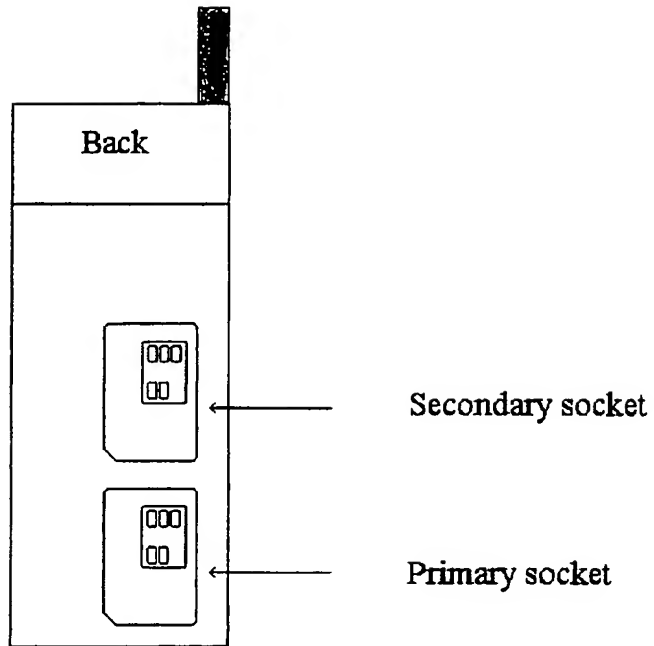


Fig. 8

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IT 98/00308

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 H04Q7/32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 734 928 A (WEINER SHELDON ET AL) 29 March 1988 see column 3, line 3 - line 64; figure 3 ---	1,3,5
X	EP 0 586 081 A (NOKIA MOBILE PHONES LTD) 9 March 1994 see column 5, line 32 - column 7, line 22 ---	1-3,5
A	MAES P: "SUBSCRIBER IDENTITY MODULE FOR PAN-EUROPEAN MOBILE TELEPHONE NETWORK" SMART CARD TECHNOLOGY, 1990, pages QA, Q01-Q13, XP000199579 see page 2 --- -/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

7 May 1999

Date of mailing of the international search report

17/05/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Tsapelis, A

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IT 98/00308

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>H BSCHER ET AL: "Elektrotechnik Fachbildung Kommunikationselektronik 1" FACHWORTERBUCH ELEKTROTECHNIK ELEKTRONIK, 1989, pages 296-298, XP002094409 BUDIG P - K see page 296, left-hand column, line 1 - page 297, left-hand column, line 7 -----</p>	

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/IT 98/00308

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4734928 A	29-03-1988	US 4677653 A	30-06-1987
EP 0586081 A	09-03-1994	GB 2269512 A	09-02-1994
		AU 4435393 A	10-02-1994
		CN 1086367 A	04-05-1994
		DE 69317830 D	14-05-1998
		DE 69317830 T	12-11-1998
		DE 586081 T	15-05-1997
		JP 7312630 A	28-11-1995